Lockheed Martin
Scientific Engineering, Response and Analytical Services
2890 Woodbridge Avenue Building 209
Edison, NJ 08837-3679
Telephone 732-321-4200 Facsimile 732-494-4021

DATE: April 23, 2012

TO: Kelley Chase, EPA Region 3 OSC
Cynthia Caporale, EPA Region 3 OASQA

THROUGH: Ex. 4 - CBI SERAS Program Manager
Ex. 4 - CBI SERAS QA/QC Officer

FROM: Ex. 4 - CBI QA/QC Chemist

SUBJECT: VERIFICATION/COMPLETENESS CHECK – DIMOCK, PA LABORATORY DATA
File NAREL 1100243-GAMMA.pdf
File NAREL 1100243-RA226.pdf
File NAREL 1100243-Th.pdf

INTRODUCTION

On April 11 to 12, 2012, a review of the case narratives and corresponding certificates of analysis from the U.S. EPA National Air and Radiation Environmental Laboratory (NAREL Reports Posted April 5) was conducted at the SERAS facility in accordance with the Follow-Up Verification/Completeness Check agreed upon during our teleconference on Wednesday 2/8/12.

The assumptions for this review include the following: 1) Case narratives from the EPA and Regional labs and/or subcontract labs have been reviewed in accordance with EPA, Regional or Environmental Services Assessment Team (ESAT) protocols and contain all pertinent and complete information to conduct the completeness check. SERAS will base this review on the information provided by the laboratory and not on an actual data package; and 2) SERAS will relay any "red" flags to the EPA R3 personnel to resolve and determine data usability.

OBSERVATIONS

In accordance with Table 1 – Field and QC Sampling Summary (Rev01 - 2/3/12), Table 2 – Sample Analytical Requirements Summary (Rev01 – 2/3/12), Methods for Groundwater and Surface Water, NAREL AM/SOP-3 Standard Operating Procedure for Gamma-Ray Spectrometry, NAREL AM/SOP-14 Standard Operating Procedure for Radium-226 Analysis in Water by Eichrom and NAREL AM/SOP-1 Actinides in Environmental Matrices by Extraction Chromatography and the validation guidelines developed by SERAS for radiochemical data (using critical value of 1.65), the following observations were noted and need to be clarified/resolved.

General Comments: Gamma, RA226 and Th Analysis:

1. Raw data were not provided; therefore, it is assumed that all sample, method blank and QC results (LCS, Duplicates) were correctly transferred to the analytical result tables.
2. Only 1 equipment blank (1/28/12) was shipped with this sampling batch. No qualifications could be made on this equipment blank because it could not be determined which samples it was associated with.

File NAREL 1100243-GAMMA.pdf

1. No minimum detectable concentrations (MDCs) were listed for the following: FB04 (affecting samples HW05, HW12, HW14, HW14-P, HW17 and EB01). Since the MDC values are typically needed to conduct a thorough data assessment, data, if qualified, were based on the 2σ uncertainty only.

2. The sample result is greater than the 2σ uncertainty but less than the MDC. Bi214 should be qualified "UJ" in the result qualifier column in Scribe for samples HW01 and HW08A; and Pb214 should be qualified "UJ" in the result qualifier column in Scribe for sample HW02.
3. The sample result is greater than the 2σ uncertainty but less than the MDC and the uncertainty multiplied by 1.65 is greater than the MDC indicating that the MDC may be reported too low. The following K40 result for sample HW19should be qualified "UJ" in the result qualifier column in Scribe.
4. The absolute value of the sample result was greater than the 2σ uncertainty. The following results should be qualified as unusable "R" in the result qualifier column in Scribe: U235 for samples HW14-P, HW-17, FB04 and EB01; and Bi212 for sample for sample FB04.
5. The absolute value of the sample was less than the 2σ uncertainty. The following results should be qualified as non-detect "U" in the result qualifier column in Scribe: Bi212 for samples HW19, FB05, HW02 and HW12; and Ra228 for samples: HW24-P and HW08A.
6. The absolute value of the sample was less than the 2σ uncertainty and the uncertainty multiplied by 1.65 is greater than the MDC indicating that the MDC may be reported too low. The following results should be qualified as "UJ" in the result qualifier column in Scribe: Ra228 for samples: FB01, HW-19P, FB05, FB03, HW02z, HW04, HW12 and HW24; Th234 for samples FB01, HW19, FB05, HW24-P, FB03, HW01, HW02, HW02z, HW08A, HW04, HW05, HW12, HW14 and HW24; U235 for samples HW19, HW-19P, FB05, FB03, HW02z, HW08A, HW05, HW14 and FB02; Ra226 for samples HW-19P, FB05, FB03, HW01, HW02, HW05 and HW24; K40 for samples FB05, HW24-P,FB03, HW08A, HW12, HW14 and HW24; Pb214 for samples FB03, HW12, HW14 and FB02; and Bi214 for samples HW12, HW24 and FB02.
7. The sample result was less than the 2σ uncertainty and the MDC. The following results should be qualified non-detect "U" in the result qualifier column in Scribe: Bi212 for samples FB01, HW19-P, HW24-P, HW01, HW02z, HW08A, HW04, HW05, HW14, HW24 and FB02; K40 for samples FB01 and HW19-P; Th234 for sample HW19-P; Bi214 for sample FB05; Pb214 for samples FB01, FB05, HW01, HW08A and HW04; Ra226 for samples FB01, HW19, HW24-P, HW02z, HW08A, HW04, HW14 and FB02; Ra228 for samples HW01 and HW02; and U235 for samples HW02, HW12 and HW24.
8. The sample result was less than the 2σ uncertainty and the MDC and the uncertainty multiplied by 1.65 is greater than the MDC indicating that the MDC may be reported too low. The following results should be qualified "UJ" in the result qualifier column in Scribe: U235 for samples FB01, HW24-P, HW01 and HW04; Ra228 for samples HW19, HW05, HW14 and FB02; Tl208 for sample HW19-P; Pb214 for samples HW24-P and HW24; Bi212 for sample FB03; Bi214 for samples FB03 and HW14; K40 for samples HW01, HW02, HW02z, HW04, HW05 and FB02; Ra226 for sample HW12; and Th234 for sample FB02.
9. The following sample results failed the NAD criteria. Bi214 for samples HW19 and HW19-P should be qualified "J" in the result qualifier column in Scribe.

File NAREL 1100243-RA226.pdf

1. The sample result was less than the 2σ uncertainty and the MDC. The following results should be qualified non-detect "U" in the result qualifier column in Scribe: Ra226 for samples FB01 and FB02.
2. The sample result was less than the 2σ uncertainty and the MDC and the uncertainty multiplied by 1.65 is greater than the MDC indicating that the MDC may be reported too low. The following results should be qualified "UJ" in the result qualifier column in Scribe: Ra226 for samples FB05, HW05, HW14, HW14-P and FB04.
3. The sample result is greater than the 2σ uncertainty but less than the MDC. The following results should be qualified as "UJ" in the result qualifier column in Scribe: Ra226 for sample HW08A.
4. The following sample results failed the NAD criteria. Ra226 for samples HW01, HW02 and HW02z. should be qualified "J" in the result qualifier column in Scribe.

File NAREL 1100243-Th.pdf

1. The sample result is greater than the 2σ uncertainty but less than the MDC and the uncertainty multiplied by 1.65 is greater than the MDC indicating that the MDC may be reported too low. The following results should be qualified "UJ" in the result qualifier column in Scribe: Th228 for samples HW01, HW05, EB01 and HW17.
2. The absolute value of the sample was less than the 2σ uncertainty. The following results should be

qualified as non-detect"U" in the result qualifier column in Scribe: Th227 for samples FB01, HW19-P, HW24-P, HW04, HW05, HW14 and FB04; Th232 for samples HW19-P, HW24-P, HW05 and HW24; and Th230 for sample FB02.

3. **The absolute value of the sample result was greater than the 2σ uncertainty.** The following results should be qualified unusable "R" in the result qualifier column in Scribe: Th228 for sample HW02z.
4. **The sample result was less than the 2σ uncertainty and the MDC.** The following results should be qualified non-detect "U" in the result qualifier column in Scribe: Th228 for samples FB01, HW24-P, HW08A and FB02;Th232 for samples FB01, HW19, FB05, HW02z, HW14-P, FB04, HW17 and FB02; Th227 for samples HW02, HW08A, HW17 and FB02; and Th230 for sample EB01.
5. **The sample result was less than the 2σ uncertainty and the MDC and the uncertainty multiplied by 1.65 is greater than the MDC indicating that the MDC may be reported too low.** The following results should be qualified "UJ" in the result qualifier column in Scribe: Th230 for samples FB01, HW19, FB05, HW01, HW02, HW08A, HW04, HW05, HW12, HW14-P, FB04, HW17 and HW24; Th227 for samples HW19, FB03, HW02z and HW14-P; Th228 for samples HW19, FB05, HW02, HW04, HW14-P and HW24; and Th232 for samples FB03, HW01, HW02, HW04 and HW14.
6. **The following sample results failed the NAD criteria.** Th230 for sample HW02z; Th228 for samples: HW12 and HW14; and Th227 for sample HW24 should be qualified "J" in the result qualifier column in Scribe.

cc: Ex. 4 - CBI SERAS Project Officer
John Gilbert, ERT WAM
Gary Newhart, ERT WAM
Ex. 4 - CBI SERAS Task Leader